CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 94-005
NPDES NO. CA0028631

WASTE DISCHARGE REQUIREMENTS FOR:

NATIONAL SEMICONDUCTOR CORPORATION
SANTA CLARA
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

1. National Semiconductor Corporation (hereinafter called the discharger), by application (Report of Waste Discharge) dated June 21, 1991, and subsequent amendment dated July 15, 1991 has applied for reissuance of National Pollutant Discharge Elimination System (NPDES) permit No. CA0028631.

2. The discharger manufactures semiconductors and integrated circuits. De-ionized water is required in the manufacturing processes. The discharger uses reverse osmosis to produce de-ionized water. The source of raw water is groundwater from one on-site production well owned by the City of Santa Clara.

3. The discharge consists of brine (or reject water) from the reverse osmosis plant. Treatment consists of neutralization (with sodium hydroxide) prior to discharge to the City of Santa Clara storm drain system (lat. 37°22'32", long. 121°59'43") which drains to Calabazas Creek, a water of the United States. Calabazas Creek is a tributary to South San Francisco Bay via Guadelupe Slough. This discharge is currently governed by Waste Discharge Requirements specified in Order No. 86-58, adopted by the Board on August 20, 1986. The conditions of Order No. 86-58, were continued in effect past the expiration date, in accordance with NPDES regulations, by letter of the Executive Officer dated May 26, 1993.

4. The USEPA and the Board have classified this discharge as a minor discharge.

5. The Report of Waste Discharge and recent self-monitoring reports describe the discharge as follows:

   Average flow: 250,000 gallons per day
   BOD_5: 3.4 mg/l
   TOC: 2.6 mg/l
   TDS: 1000 to 1900 mg/l

6. The subject of this Order is limited to the discharge of brine from the reverse osmosis plant as described in the following finding. The discharger also discharges treated groundwater from remediation activities and storm water. These two types of

discharges are covered by other orders issued by the Board. The groundwater discharges are permitted by NPDES Nos. CA0028835 (Order No. 87-015), and CA0029629 (Order No. 90-006). For storm water, the discharger filed a Notice of Intent for coverage under General Permit No. CAG612001 for discharge of storm water from areas affected by industrial activity in Santa Clara County.

7. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on September 16, 1992, and the State Water Resources Control Board (State Board) approved it on April 27, 1993. The Basin Plan specifies water quality objectives for Calabazas Creek, South San Francisco Bay and contiguous waters.

8. The beneficial uses of Calabazas Creek and South San Francisco Bay are:

   a. Water contact recreation
   b. Non-contact water recreation
   c. Commercial and sport fishing
   d. Shellfish harvesting
   e. Wildlife habitat
   f. Warm and cold fresh water habitat
   g. Estuarine habitat
   h. Fish migration
   i. Preservation of rare and endangered species
   j. Navigation
   k. Agricultural supply
   l. Industrial service supply

9. The Basin Plan prohibits discharge of any wastewater which has particular characteristics of concern to beneficial uses at any point at which the wastewater does not receive a minimum dilution of 10:1 and also prohibits discharge of wastewater south of the Dumbarton Bridge. The Board made a determination in Order No. 86-58 that the discharge does not have particular characteristics of concern, provided the discharge limitations contained in Order No. 86-58 are met. This determination is still valid provided the limitations of this Order are met.

10. Samples collected in 1989 through the present show occasional violations of the toxicity effluent limitation for rainbow trout specified in Order No. 86-58. The discharger has not demonstrated that this problem has been remedied. The provisions of this Order will require the discharger to conduct a toxicity identification and reduction evaluations (TIE/TRE) to find the source of the toxicity and reduce it acceptable levels.

11. The reissuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21000 of Division 13) of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

12. Effluent limitations and toxic effluent standards established pursuant to Sections 208(b), 301, 304, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharge.

13. Effluent limitation guidelines requiring the application of best available technology economically achievable (BAT) for this point source discharge have not been promulgated by the USEPA. Effluent limitations of this Order are based on the Basin Plan, other State plans and policies, current plant performance, and best engineering judgement. The limitations are considered to be those attainable by BAT in the judgement of the Board.

14. The Board has notified the discharger and interested agencies and persons of its intent to reissue waste discharge requirements, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

15. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Water Pollution Control Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Effluent Limitations

1. The discharge of reverse osmosis brine containing constituents in excess of the following limits is prohibited:

Constituent	Limitation
Total Dissolved Solids	daily maximum of 2,000 mg/l
Residual Chlorine	less than 0.0 mg/l
pH	within 6.5 to 8.5

2. The discharged shall meet the following acute toxicity limitation:

The survival of test fishes[1] in 96-hour bioassays of Waste 001 as discharged shall be a three sample[2] median value of not less than 90 percent survival, and a single sample value of not less than 70 percent survival.

[1] Test fishes as specified by the Executive Officer in the Self-Monitoring Program.

[2] A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if one of the past two or less bioassay tests show less than 90 percent survival.

B. Receiving Water Limitations

1. The discharge of wastes shall not cause the following conditions to exist in waters of the State at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;

   e. Toxic or deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 or the Federal Water Pollution Control Act or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. Provisions

1. ACUTE TOXICITY REDUCTION EVALUATION: The discharger shall conduct an acute toxicity reduction evaluation (TRE) to address past violations of the acute toxicity effluent limit and to ensure future compliance with the limit. The TRE shall initially involve a toxicity identification evaluation (TIE). The objective of the TIE shall be to identify the chemical or combination of chemical that are causing the observed toxicity. Every effort using currently available TIE methodologies shall be employed by the discharger. This may initially involve an evaluation of past toxicity data and plant operating records. As toxic constituents are identified or characterized, the discharger shall continue the TRE by determining the source(s) of the toxic constituent(s) and evaluating alternative strategies for reducing or eliminating the constituent(s) from the discharge. All reasonable steps shall be taken to reduce toxicity to the required level. The TIE/TRE shall be conducted in accordance with the following time schedule:

   a. Submit a TIE study plan acceptable to the Executive Officer by March 15, 1994.

b. Conduct a TIE in accordance with the TIE study plan approved by the Executive Officer within 15 days of the date of approval.

c. Submit quarterly status reports on the progress of the TIE/TRE. The reports shall include summaries of the results, and a discussion of future planned activities in TIE and TRE efforts. These reports shall be submitted by the 15th day following the end of each calendar quarter.

During the TRE, acute toxicity monitoring for compliance determinations may be incorporated into the TRE activities. Thereafter, the monitoring requirements shall be as specified by the Executive Officer in the Self-Monitoring Program.

2. The discharger shall conduct monitoring in accordance with the attached Self-Monitoring Program as adopted by the Board. The Self-Monitoring Program may be amended by the Executive Officer pursuant to EPA regulations 40 CFR 122.62, 122.63, and 124.5.

3. Pursuant to USEPA regulations 40 CFR 122.44, 122,62, and 124,5, this permit may be modified prior to the expiration date to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as part of this Order.

4. All applications, reports, or information submitted to the Board shall be signed and certified pursuant to USEPA regulations 40 CFR 122.41(k).

5. This Order includes all items of the attached "Standard Provisions, Reporting Requirements" dated August 1993, except Sections B, and C.

6. This Order supersedes the requirements of Order No. 86-58. Order No. 86-58 is hereby rescinded.

7. This Order expires on January 19, 1999. The discharger must file a Report of Waste Discharge in accordance with Title 23 of the California Code of Regulations, not later than 180 days in advance of such date as application for issuance of new waste discharge requirements.

8. This Order shall serve as National Pollutant Discharge Elimination System permits pursuant to Section 402 of the Federal Water Pollution Control Act, or amendments thereto, and shall become effective on the date of adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

9. The discharger shall comply with all sections of this Order immediately upon adoption.

I, Steven R. Ritchie, Executive Officer do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on January 19, 1994.

for
STEVEN R. RITCHIE
Executive Officer

Attachments:

Standard Provisions & Reporting Requirements, August 1993
Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

NATIONAL SEMICONDUCTOR CORPORATION
SANTA CLARA
SANTA CLARA COUNTY

NPDES NO. CA0028631
ORDER NO. 94-005

CONSISTS OF

PART A dated 8/93, and

PART B Adopted: January 19, 1994

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. EFFLUENT

Station	Description
E-001	At any point in the outfall between the point of discharge and the point at which all wastes tributary to the discharge are present, prior to mixing of this discharge with other wastewater discharges not permitted by this Order.

B. INFLUENT WATERS

Station	Description
I-001	Located at any point in the pipe which delivers raw water to the discharger's reverse osmosis plant, prior to any point of use. If more than one pipe is involved in supplying raw water, the influent sample shall consist of a flow proportioned composite from each of the sources.

II. SCHEDULE OF SAMPLING AND ANALYSIS

A. The schedule of sampling and analysis shall be that given in Table 1 (attached).

B. Sample collection, storage, and analyses shall be performed according to requirements in the latest 40 CFR 136, in the Permit, or as specified by the Executive Officer.

III. MODIFICATIONS TO PART A

A. Exclude paragraphs C.3, C.4, C.5, E.3, E.4, E.5, and F.3.

B. The Self-Monitoring Report required by paragraph F.4 shall be submitted on a quarterly basis, by the 15th day following the end of each calendar, on Jnauary 15, April 15, July 15, and October 15.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Order No. 94-005.

2. Is effective on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger and revisions will be ordered by the Executive Officer, pursuant to 40 CFR 122.62 and 124.4.

STEVEN R. RITCHIE
Executive Officer

Effective Date: 1/21/94

Attachments:
Table 1 - Schedule of Sampling, Measurement and Analysis

TABLE 1

SCHEDULE OF SAMPLING, MEASUREMENTS, AND ANALYSIS

SAMPLING STATION	E-001		I-001
Type of Sample	Comp	G	Comp
Flow Rate (gallons per day)	daily		monthly[1/]
pH (standard units)		Cont	
Residual Chlorine (mg/l)		monthly	
Temperature (degrees C or F)		daily	
Total Dissolved Solids (mg/l)	monthly[3/]	daily[3/]	
Acute Toxicity, 96-hr Static Renewal Bioassay 2/	2/		
Standard Observations		weekly	
Copper (mg/l, and kg/day)	monthly[1/]		monthly[1/]
Silver (mg/l, and kg/day)	monthly[1/]		monthly[1/]

LEGEND FOR TABLE

Comp = 24-hr composite sample
G = Grab sample
Cont = Continuous Monitoring

Notes for Table:

1. Analysis for copper and silver in E-001, and Influent station sampling and analysis shall be conducted for 12 months following the adoption of this permit. Influent station sampling should be collected coincident with effluent sampling. The analytical method used for copper and silver shall be capable of low detection limits to quantify copper and nickel concentrations at 4 ppb or lower. The mass loading of these constituents in the influent and the effluent shall be calculated and reported in the self-monitoring reports.

2. Rainbow trout shall be used to determine compliance with to Effluent limitation A.2. The tests shall be 96-hour static renewal bioassays. The discharger shall perform the tests according to protocols approved by the USEPA, State Board, published by the American society for Testing and Materials (ASTM), or American Public Health Association.

   During performance of the TIE/TRE required by Provision 1, the discharger may sample at irregular frequencies, or substitute static tests for the static renewal tests as

necessary to assist in the TRE effort. The number of bioassays during the TRE shall be not less than twelve per year.

3. The monthly composite sample for Total Dissolved Solids (TDS) shall be analyzed by a certified laboratory in accordance with Standard Methods for the Examination of Water and Wastewater (latest edition). The discharger may, at his discretion, determine daily TDS concentrations in-house using appropriately calibrated TDS meters provided the TDS measurements using meters do not deviate from TDS measurements using Standard Methods by more than 10 percent.